Results: Between 2005 and 2013, nine patients (3%) with malignant lower extremity STS underwent surgical resection with vascular reconstruction. Of these, 6 (67%) underwent resection of femoral and popliteal vessels with subsequent femoropopliteal bypass, 1 (11%) underwent resection of femoral vessels with iliac-SFA bypass, 1 (11%) underwent transection of the femoral and popliteal vessels with reanastomosis, and 1 (11%) underwent resection of the superficial femoral vessels with superficial femoral artery-distal superficial femoral artery bypass. All bypasses were performed using saphenous vein from the contralateral leg. Four patients (44%) returned to the operating room for wound complications requiring incision and drainage. Three (33%) required plastic surgery each for one of the following: VRAM flap, split-thickness skin graft, and pedicle gracilis flap. Functional activity was assessed using the criterion 1 of the Musculoskeletal Tumor Society (MSTS) functional assessment forms preoperatively and at follow-up at 6 months and 1 year. A score of 5 indicates no functional restrictions, whereas a score of 0 indicates total disability. The mean MSTS scores preoperatively and at 6 months and 1 year were 4.1, 3.6, and 3.8, respectively, for the vascular reconstruction group, and 4.2, 4.3, and 4.3, respectively, for the limb-sparing surgery without vascular reconstruction group.

Conclusions: The need for vascular reconstruction during limb-sparing surgery for lower extremity malignant STS is rare in a high-volume sarcoma center. Wound morbidity is high, and these patients frequently require plastic surgery to achieve wound healing. Postoperative functional status as assessed by the MSTS is acceptable but may be lower than in patients not requiring vascular reconstruction.

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Determining the Toe-Brachial Index in Young Healthy Adults

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Objectives: The purpose of this study was to determine the toe-brachial index (TBI) in healthy young adults and compare it with the accepted reference range.

Methods: Medical students from the undergraduate class were prospectively recruited. Physical measurements (height, weight), health behaviors (physical activity quantity and type, smoking status, alcohol consumption), and medical history (medications, relevant diagnoses, family history) were collected. Bilateral brachial, toe, and ankle blood pressures (using both dorsalis pedis and posterior tibial arteries) were measured. TBI was calculated as the mean toe blood pressure divided by the highest systolic brachial blood pressure.

Results: Forty medical students with a mean age of 24.7 ± 2.1 years, without any comorbid conditions, were studied. There were no current or past smokers. Participants maintained relatively healthy lifestyles (hours of activity per week: 5.1 ± 3.3; body mass index: 21.7 ± 2.4 kg/m^2). Caffeine and alcohol consumption was modest (10.6 ± 8.5 and 1.8 ± 2.7 drinks per week, respectively). The mean systolic brachial blood pressure was 121 ± 9 mm Hg (right), and 116 ± 9 mm Hg (left). The TBI was 0.95 ± 0.11 (right) and 0.97 ± 0.13 (left) for men, and 0.86 ± 0.13 (right) and 0.86 ± 0.20 (left) for women.

Conclusions: The distribution of TBI in this healthy population differs significantly from the referenced normal range of 0.6 to 1.0. Our findings suggest that the accepted value of 0.6 for the low-normal limit is too low. This level may promote underdiagnosis of peripheral vascular disease and represent foregone opportunities for early intervention. We recommend that the TBI reference range be modified to increase the clinical utility of this measurement.

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Fistula Outcomes in Octogenarians: Is a Fistula First Approach Appropriate?

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Objectives: The fastest growing segment of the dialysis population in Canada is in patients aged >75 years, with an overall increase from 5% in 1980 to 28.2% in 2010. These patients present multiple significant challenges to caregivers, including differences in life expectancy, comorbid health status, goals of care, and supportive care requirements. The current National Kidney Foundation Kidney Disease Outcomes Quality Initiative guidelines do not take age into account in recommendations for hemodialysis access. The goal of our study was to compare failure to mature, overall survival, and complication rates for arteriovenous fistulae in octogenarians with nonoctogenarians to determine if our standard approach to renal access should be modified to account for advanced age.

Methods: A review was conducted of all patients requiring arteriovenous fistulae for hemodialysis access at two teaching hospitals between 2007 and 2012. The study was designed as a retrospective cohort study with patients stratified by age into octogenarians and nonoctogenarians. Data were collected from a large, prospectively maintained database of all dialysis and predialysis patients.

Results: Of 1019 patients who had their access created during the study period and were eligible for inclusion, 156 (15.3%) were aged ≥80 years at the time of fistula creation. With respect to the primary end point, there was no difference between octogenarians and nonoctogenarians with respect to failure to mature of the fistula (38.7% vs 34.0%; P = NS). Octogenarians had decreased overall survival and were significantly more likely to die during the study period (45.8% vs 23.2%; $P < .001$). There were no significant differences between the two cohorts with respect to postoperative incidence of steal syndrome (7.3% vs 6.3%; P = NS) or wound complications (5.3% vs 5.7%; P = NS).

Conclusions: The results of this study demonstrate no overall differences in maturation rates within the octogenarian group and that age alone should not preclude placement of an autogenous arteriovenous fistula in this cohort. These findings demonstrate that an approach that incorporates limited life expectancy should be used when planning hemoaccess in this growing demographic.

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Suggestion of Better Outcomes With Two-Stage Brachiobasilic Vein Transposition: A Meta-Analysis

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Objectives: Brachiobasilic vein transposition is recommended in patients who are not candidates for a radial or brachial artery-to-cephalic vein fistula for dialysis access. One-stage and two-stage procedures both have advantages and disadvantages. Which procedure results in improved outcomes remains unclear.

Methods: A systematic review was conducted of the MEDLINE and EMBASE databases for studies that compared one-stage and two-stage brachiobasilic vein transpositions. Abstracts and full texts of studies were screened independently by two reviewers, with data abstraction done in duplicate. Random-effects meta-analysis was used to identify differences in primary failure rates and 1-year primary and secondary patency rates. Study quality was assessed using a previously described tool designed for observational studies reporting on dialysis access outcomes.

Results: Of 1662 abstracts that were screened, 131 were selected for full-text review. Of these, seven studies (one randomized trial, six observational studies) involving 737 patients met the inclusion criteria. The pooled odds ratio (OR) estimate for primary failure was 1.36 (95% confidence interval [CI], 0.92-2.00), suggesting reduced failure rate in patients having undergone two-stage transpositions, although this was not statistically significant (Fig 1). Similarly the estimated ORs of 1.71 (95% CI, 0.89-3.28) for the 1-year primary patency rate and 1.44 (95% CI, 0.49-4.24) for the 1-year secondary patency rate were in favor of the two-stage procedure, but again, the results were nonsignificant (Fig 2). Study quality was limited by unclear outcome definitions, minimal control for confounding, and variable selection criteria. The decision to pursue one-stage vs two-stage was often based on the size of the basilic vein, with a two-stage procedure reserved for patients with smaller veins.

Conclusions: Meta-analysis of the existing literature comparing one-stage and two-stage brachiobasilic vein transposition suggests improved 1-year patency and reduced primary failure rates in the two-stage group, despite the two-stage procedure being used in patients with smaller basilic veins. These findings are limited by the small size, observational design, and inconsistent quality of included studies.

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